Remarks

The examiner's indication of allowable subject matter in claims 16 and 21 is noted with appreciation. However, it is applicant's position that broader protection is merited, as the claimed invention concerns a different approach from that taught as a whole by each reference, which provides significant advantages in the practical working environment of the invention.

Claim 1 includes features of original claims 13 and 14 that the portable apparatus has as many reference load cells and fluid rams as working load cells, the provision of means of a fluid source, and the indication that the number of reference cells and rams is determined by the requirement that they be usable to calibrate each of the working load cells in any of the installations simultaneously.

Amended claim 13 specifies the facility to act selectively as well as simultaneously, on each load cell. (This is based on the text on page 4 at line 6.)

Claim 17 has been amended, similarly to claim 1, to include features of prior claim 18 which corresponds in concept with claim 13. Consequential amendment has been effected to claim 19.

New method claim 22 emphasizes fluid diversion by switch means.

The amendments clearly obviate the objection under 35 USC 102 of anticipation by Karpa as that did not apply to claims 13,14 and 18.

In contending the rejection of obviousness over Karpa, as it may be applied to the amended claims, it is emphasized that the amended claims include provision by the portable part of the apparatus of a source of fluid under pressure and means for supplying fluid under pressure from the source to as many rams and reference load cells as are necessary to simultaneously activate the calibration process on every working load cell.

That is clearly outside the teaching of Karpa which is essentially directed to equipment for test loading a scale platform by using only a single portable mechanical thruster which must be moved about the platform and positioned at any location on it, provided that the overhead crossbeam against which the thruster pushes does extend

over the chosen location. The teaching of Karpa, as a whole, is clearly directed to an economical means by which a w igh scale can be tested by use of a single thruster either at individual locations on the platform adjacent or above individual load cells, or at intermediate positions on the platform to test either a pair of load cells or even all four cells supporting a platform, (see column 1 lines 60-69 and column 4, lines 17 to 20).

Karpa teaches only a single thruster device to load the platform at different locations. There is no conception of the simultaneous use of multiple thrusters to test all the load cells independently or simultaneously. Rather, the skilled man is taught that in order to test individual load cells, the thruster should be positioned adjacent such load cells in turn, while in order to calibrate a plurality of load cells at the same time, the thruster should be positioned between them. Karpa even admits that calibration accuracy can be lost by the approach taught (column 4, lines 22 to 23).

In contrast, the claimed invention provides in the portable apparatus a plurality of reference load cells and fluid rams, a source of fluid under pressure, and means for supplying fluid under pressure from the (common) source to the fluid rams associated with each one of the reference load cells. This can be done simultaneously (claims 1 and 17), and also selectively (claims 13 and 18), enabling a weighing installation to be calibrated much more rapidly, simply and reliably. Instead of moving the thruster of Karpa from location to location over the platform, reference cells are located at each working load cell, and a sequence of calibrations initiated, using hydraulic fluid supplied from source in the portable element of the apparatus (such as the trolley shown in Figure 4) to allow the installation to be calibrated over all cells simultaneously, and optionally also on an individual selected cell basis, one at a time, and probably using both methods. (Page 4, lines 1 to 22, and page 9, line 19 to page 10 line 21). Using Karpa's apparatus, the thruster would need to be moved, and probably the crossbeam too, between each measurement.

The claimed invention accordingly goes beyond the concept taught by Karpa by providing a multiple ram system powered by a (single) fluid source enabling integration of the calibration loads applied simultaneously to multiple points on the weighing installation.

The provision of a single fluid power source connecting to all rams enables central control of hydraulic pressures in all of the different supply lines to the rams associated with the various reference load cells, and in particular, the ability to set a target load and achieve it and maintain it constant while the weighing installation stabilises under this load, which can take a significant amount of time. The system described in the principal reference (Karpa) does not disclose any means for control of the applied load, besides the manually operated hydraulic loading jack.

In contending the examiner's rejection of claim 5 over Karpa in view of Maresca, it is pointed out that Maresca merely teaches that a scale, in the form of a flexible graduated tape, can be attached to the bottom of a container of liquid by a magnetic clamp on the container floor, to enable the level of the liquid to be read by means of a float. (Springs are provided to allow some stress relief). Thus, the secondary reference is not, in any way, analogous to the structure of claim 5, and the unimaginative technician who wished to provide an anchorage for applying test loadings to a weigh vessel would not address the teaching of Maresca, directed, as it is, as a whole, to the manufacture of gauges for measuring liquid levels.

In contending the rejection of claims 9 and 10 over Karpa, it is pointed out that Karpa teaches that the calibrating load is transmitted to the working load cell through the platform itself, and that, moreover, a load distribution block 8 and load adaptor 9 are required to spread the load over the platform. (Karpa teaches provision of working load cells both underneath the platform (figures 1, 2 and 3) and alongside the platform (figure 4)). Clearly, bearing in mind that Karpa requires the thruster to be situated unobstructed under the crossbeam 7, it would not seem possible in any practical construction to arrange for the thruster of Karpa to bear on to a vessel support bracket (which of necessity overlies the working load cell), because the platform is simply in the way. In respect of the figure 4 construction in Karpa, there is no room for applying the thruster to the working load cell through a support bracket, and there is also a problem with regard to the load distribution block or other interface to be used. The whole approach of Karpa is to apply the thruster to the platform, and it would require considerable effort to adapt Karpa to operate directly on the vessel support bracket.

In the examiner's rejection of claims 13 to 15 and 18 to 20, in item 8 of the Office Action, a considerable number of items missing from the disclosure of Karpa are listed. As pointed out above, Karpa teaches a different approach from the claimed invention in that, although multiple working load cells are distributed at spaced apart locations throughout a weighing apparatus, Karpa teaches provision of only a single calibrating ram and associated load cell structure and physical movement of the single calibrating ram/cell to each different location to perform each calibration step separately, isolated from any other calibration step. There would not be any motivation for the technician familiar with the Karpa teaching to adopt the radically different approach of providing a ram/cell unit for each working load cell linked to a (common) fluid source for calibration of working load cells simultaneously.

It is noted that among the items that the examiner asserts that Karpa does include or disclose are means for recording the calibrating load applied thereto as measured by the reference load cell, and means recording the corresponding output for the working load cells to provide a calibration record. However, it is pointed out that, the passages indicated by the examiner, at column 2 lines 40 to 57, and column 3 lines 35 to 41 merely refer to read out instruments or gauges, not to recording means.

There are some other disadvantages of the Karpa device. Firstly, it always applies its thrust to the scale platform 1, and it is clear from the drawings that in every case it is being calibrated with the extra dead weight of the rubber or wood distribution block 8 and load adaptor 9 (which appear from the drawings to be relatively massive) and which will influence the result (and may be subject to corrosion with weight change over time). When the calibration apparatus is removed, that dead weight will be removed also, so that the scale will read light by the weight of 8 + 9. In the illustrated embodiment of the invention, only a self levelling washer combination 48 (and the weight of the reference cell are extra, and those will be relatively insignificant in proportion. Those correspond to items 10 and 11 In fig 1 of Karpa .

The reliance on the overhead crossbeam 7 (Figs 3 and 4) presents clear mechanical limits to the amount of force that can be tested using this apparatus, and the mechanisms proposed to generate the test thrust do not include any means for

compensating for drift in the applied thrust while the system is stabilising to enable readings to be accurately taken. In the embodiments of fig 1 and 2, pre-formed passages are required in the platform 1 at every loading point to be calibrated as Karpa teaches loading the platform only above the support point (col 2, lines 45-50), (otherwise the overhead beam arrangement of fig 3 and 4 is required (col 2, lines 64-67). The method of applying the thrust does not appear to admit any precision in the calibration force to be applied at any instant.

In summary, as now claimed, the invention includes a source of fluid under pressure in the portable apparatus, and means (such as hydraulic hoses) for supplying fluid under pressure from that source to the several fluid at rams at all the different working load cell locations. All can be loaded simultaneously, or they may be loaded selectively. The Karpa reference does not contain any directions to the addressee to make such a departure from Karpa's own teaching. Indeed, as stated above, the whole teaching of Karpa is to use a single (locally mobile) mechanical thruster, simple and inexpensive, (col 1, lines 60-69), which can be moved to different locations on the load platform to test either individual load cells or adjacent pairs of load cells, or all load cells on a platform panel, by appropriate relocation of the thruster. The use of multiple thrusters simultaneously, with the associated anchorage structure involving crossbeams and tie bars, would be deemed by the addressee technician to be contrary to the approach taught by Karpa as destructive of the essential requirements of a single thruster for simplicity and low cost.

Accordingly, it is respectfully submitted that the claims define allowable subject matter and favorable reconsideration of the application is requested.

An abstract of the disclosure on a separate sheet is attached.

Substitute formal drawings are enclosed in a separate letter to the official draftsman.

An information disclosure statement (Form 1449, modified) is attached, together with copies of the references cited and authorization is given to deduct the fee of $180 for consideration thereof from deposit account 21 0760 of the undersigned.

Authorization is also given to deduct the fee of $9 for an additional dependent

claim from deposit account 21 0760 of the undersigned.

A three month extension of time is requested in the attached petition and authorization is given to deduct the small entity extension fee of $465 together with any additional fee required from deposit account 21 0760 of the undersigned.

Respectfully submitted,

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The undersigned hereby certifies that this correspondence, together with any attachments, is being sent by facsimile transmission to Commissioner for Patents, PO Box 1450 Alexandria , VA 22313-1450 on September 22, 2003 9/22/03

Robert W. J. Usher